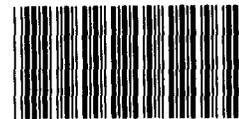


September 1991

INTERNATIONAL  
TRADE

Factors Affecting the  
Price of Alaskan  
Bristol Bay Sockeye  
Salmon



144949

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**National Security and  
International Affairs Division**

B-245580

September 13, 1991

The Honorable Leon E. Panetta  
The Honorable Don Young  
House of Representatives

As requested, we examined issues related to the prices commercial fishermen received for their 1991 catch of sockeye salmon in Bristol Bay, Alaska. Many Bristol Bay fishermen went on strike because of the relatively low prices they were offered at the beginning of the 1991 sockeye salmon season. The 70-cents-a-pound price eventually negotiated between the fishermen and processors was one-third lower than the 1990 price and well below the \$2.10-a-pound price paid in 1988.

We focused our work on identifying the principal economic factors that have contributed to this year's low prices. We did not examine the allegations of price-fixing, an issue currently under investigation by the Alaska Attorney General's office.

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**Results in Brief**

A combination of three factors explains much of the downward pressure on the 1991 price for Bristol Bay sockeye salmon:

- the size of the Bristol Bay catch,
- the inventory of salmon in Japan, and
- the competitive importance of farmed salmon<sup>1</sup> in the Japanese market.

Regarding these factors, the Bristol Bay catch has been high over the last 3 years; year-end inventories of salmon have been steadily rising in Japan, Bristol Bay's most important market; and the supply of farmed salmon, perceived by the Japanese as higher quality salmon than Bristol Bay sockeye, has increased.

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**Background**

Alaska's Bristol Bay is probably the most intensive salmon fishing grounds in the world. During a few weeks each year, millions of sockeye salmon return to spawn in rivers and lakes where they had hatched several years earlier. Between 1980 and 1989, Bristol Bay produced about 55 percent of Alaska's sockeye salmon harvest, which by dollar value is

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<sup>1</sup>Salmon farming consists of raising fish in pens in coastal areas and harvesting them at any time of the year, such as during optimal market conditions.

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the largest of Alaska's harvest of Pacific salmon.<sup>2</sup> Returning sockeye, which average about 6 pounds in weight, are noted for their flavor, high oil content, and reddish-colored flesh.

The fishing season for sockeye in Bristol Bay, which begins in June, is managed and regulated by the Alaska Department of Fish and Game. This state agency is responsible for ensuring that salmon harvests are appropriately restricted so that enough fish spawn to maintain the sockeye population. To this end, the Alaska Commercial Fisheries Entry Commission issues long-term permits to restrict the number of commercial fishermen participating in the harvest; the number of permit holders in 1990 was nearly 2,800. Bristol Bay sockeye, by state regulation, can only be caught using gillnets.<sup>3</sup> Once caught, the salmon are sold to processors, who prepare the fish for further sale by cleaning and then freezing or canning them. Processing facilities in Bristol Bay are located on shore or on ships specifically set up for processing fish. Few of the Bristol Bay sockeye are sold on the fresh market.

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## Recent Bristol Bay Sockeye Catches Have Been High, and Prices Have Fallen Since 1988

As the 1991 Bristol Bay fishing season approached, industry indicators were that prices to be paid to the fishermen would be low. As the season drew nearer, fish-processing companies were unwilling to commit themselves to a set price or were offering a low advance price in the range of 40 to 47 cents a pound. As a result, many fishermen participated in a strike lasting about 10 days. Negotiations between fishermen and processors eventually led to a price of 70 cents a pound and a resumption of fishing. This price should be considered preliminary, however, as processors in Bristol Bay usually pay fishermen bonuses after the season is over. These bonuses, which have been as much as 25 cents a pound during the last few years, are used, in part, to help ensure that specific fishermen continue to supply the processor. It is not known whether there will be a bonus paid for the 1991 season. Some processors told us that, even though they may lose money this season, competitive pressures could require them to pay a small bonus.

The 1991 price of 70 cents a pound stands in contrast to the decade-high price of \$2.10 a pound in 1988 and to the 1981 to 1990 average yearly

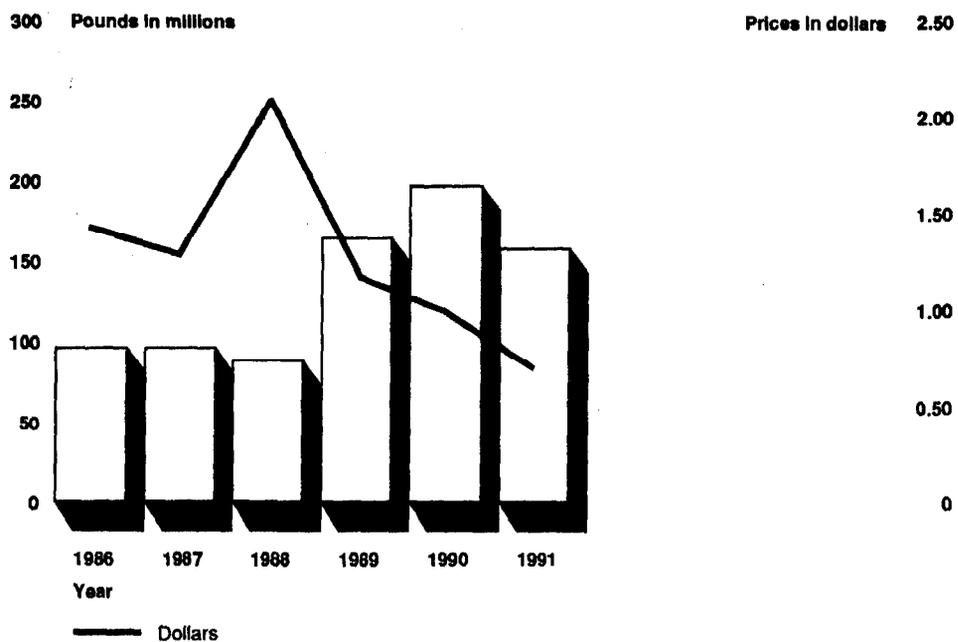
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<sup>2</sup>There are two genera: *Oncorhynchus* (Pacific salmon) and *Salmo* (Atlantic salmon and most trout). Within the category of Pacific salmon, there are six species, whose common names are (1) king or chinook, (2) sockeye or red, (3) coho or silver, (4) chum or dog, (5) pink or humpback, and (6) cherry. Alaskan fisheries yield all of these species except cherry salmon.

<sup>3</sup>Gillnets are suspended in the water like a curtain, and fish are entangled as they swim into the net's mesh.

price of \$1.09 a pound. In addition, the preliminary 1991 price was about 36 percent less than the price paid for the 1990 season's catch and 56 percent less than the price paid for the 1989 season's catch. Regarding the quantity of salmon caught during these years, there were relatively low catches in 1986 through 1988, but the last 3 years' catches have been up considerably. As figure 1 shows, the price for Bristol Bay sockeye has fallen each year since 1988. Three relatively high catches in succession seem to have contributed to the decreasing prices since 1988 in Bristol Bay.

**Figure 1: Yearly Bristol Bay Sockeye Prices and Catch**



Source: Data taken from the State of Alaska's Commercial Fisheries Entry Commission, 1986-1990; and the Alaska Department of Fish and Game, 1991.

Notes: 1990 and 1991 data is preliminary.

Price per pound is the average yearly price paid.

1991 price does not include a bonus.

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## Inventory of Salmon in Japan, the Major Market for Bristol Bay Salmon, Is High

The high salmon inventory remaining in Japan at the end of 1990 was another factor contributing to the low price paid for Bristol Bay sockeye in 1991. Available statistics indicate that Japan's inventory of frozen red salmon, the market directly supplied by Bristol Bay fishermen, has been rising steadily. Additionally, the total supply of all types of salmon is rising faster than consumption, with a resulting increase in inventory.

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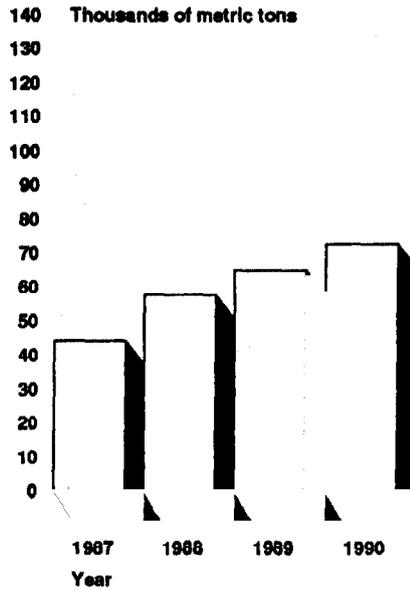
## Inventory of Frozen Red Salmon in Japan

The frozen red salmon inventory<sup>4</sup> in Japan has risen 65 percent since the end of 1987. We were told by Japanese wholesalers that sockeye is the major component of current frozen red salmon inventories. The 1990 end-of-year frozen red salmon inventory of 72.4 thousand metric tons is the highest reported in the last 4 years, showing that supply has outstripped Japanese consumption. Relatedly, U.S. Department of Commerce statistics show that wholesale prices of Bristol Bay sockeye salmon in Tokyo fell by over 50 percent between January 1989 and August 1991. By contrast, the prices paid to fishermen in Bristol Bay over the same years fell by 44 percent (any bonus paid in 1991 would make this difference smaller). Figure 2 shows the inventory of frozen red salmon stored in Japan at the end of each year.

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<sup>4</sup>Statistics on Japan's salmon inventory are kept only by the categories of pink (masu) and red (sake). Sockeye salmon, which is one of four species categorized as red salmon, is thus not separable in these statistics.

**Figure 2: Frozen Red Salmon Inventory in Japan**



Source: Taken from the National Marine Fisheries Service, Department of Commerce.

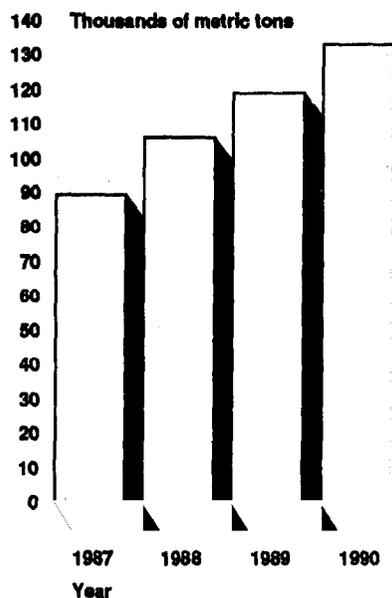
Notes: Red salmon inventories include sockeye, king, coho, and chum salmon.

Inventory levels are reported at the end of each year.

### Inventory of All Salmon in Japan

Bristol Bay sockeye competes not only with other sockeye but with all salmon, whether from Japan's domestic fisheries or from other nations' producers. At the end of 1990, the inventory of all salmon in Japan was 132.5 thousand metric tons (see fig. 3, which shows end-of-year inventories as the difference between each year's total supply and total consumption). This 1990 total is about 50 percent higher than similar inventories at the end of 1987. The high level of inventory was not caused by a fall in consumption, but instead by consumption rising at a lower rate than supply. For example, total supply to Japan, both imports and domestic production, grew by 131.4 thousand metric tons between 1987 to 1990. Consumption, on the other hand, grew by only 87.9 thousand metric tons over that period.

**Figure 3: Total Salmon Inventory in Japan**



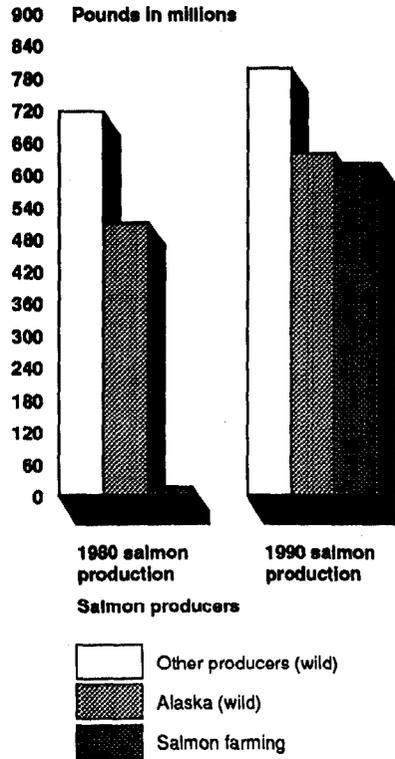
Source: Taken from the Hokkaido Association of Setnet Fisheries, which used Japanese government data.

Note: Inventory levels are reported at the end of each year.

## Quality of Salmon Is Increasingly Important When Competing in the Japanese Market

Recognizing the importance of Japan as a salmon market, many countries have targeted Japan for increased farmed salmon exports. Around 2,056 million pounds of salmon were produced around the world in 1990, up by almost two-thirds since 1980. As shown in figure 4, increasing quantities are now being farmed, growing from almost nothing in 1980 to 621 million pounds, about 30 percent of the world's production, in 1990. Alaska's production, on the other hand, rose from 511 million pounds to 639 million pounds over the same period, but its share of the world's production fell from 41 percent in 1980 to 31 percent in 1990. In 1990, Norway produced just over 50 percent of the world's farmed salmon, followed by Scotland with 12 percent, Japan with 9 percent, Canada with 8 percent, Chile with 7 percent, and the United States with 3 percent. Salmon farming is not allowed in Alaska as a result of recent action by the Alaska legislature.

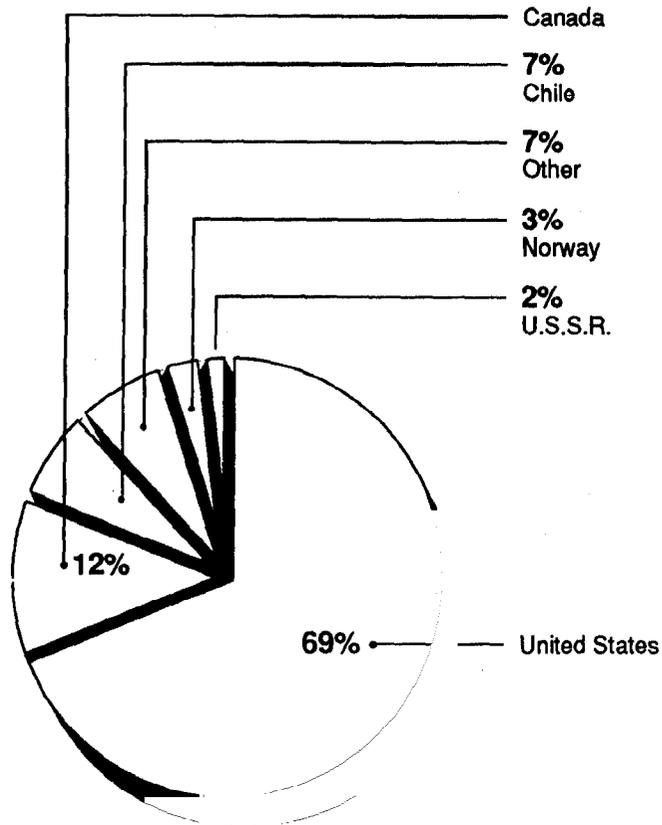
**Figure 4: The Amount of the World Salmon Supply From Alaska, Salmon Farming, and All Other Producers**



Source: Data taken from Salmon 2000, Alaska Seafood Marketing Institution.

Japan is the world's leading salmon market, consuming over one-third of the world's 1989 harvest. It is also the dominant market for Alaska sockeye. In 1988, the last year this statistic was available, almost 90 percent of Alaska's sockeye production was shipped to Japan. Figure 5 shows the share, by country, of Japan's 1990 salmon imports. The United States remains the largest supplier, but its share has fallen from 84 percent in 1980 to 69 percent in 1990.

**Figure 5: Share of Japanese 1990 Salmon Imports by Country of Origin**



Source: Data taken from Japan Marine Products Importers Association.

The downward pressure on prices for Bristol Bay sockeye salmon caused by the size of its own harvests and by the high inventories in Japan is compounded by the increase in high quality salmon in Japan, such as those produced by farming operations or wild catch that receive superior handling. Japanese wholesalers told us that quality is becoming more important as a competitive market factor and that the quality of Bristol Bay sockeye salmon was of particular significance because of the availability of high quality alternatives. They said that they were increasingly looking for higher quality at a given price in determining which species and how much to buy.

Salmon quality is seen as higher if the fish have unbroken skin with consistent skin coloring and are without bruises or markings from fishing nets. The Japanese wholesalers told us that farmed salmon are

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consistently high in quality because they receive more individual handling. Quality can also be high for wild salmon. For example, Copper River sockeye found in Alaska's Prince William Sound are sometimes caught in seine nets<sup>5</sup> in small quantities, thereby reducing net and handling damage. Another quality consideration is that Japanese consumers increasingly prefer fresh salmon to previously frozen or salted salmon.<sup>6</sup> In this regard, farmed salmon can be produced year-round rather than a few weeks or months a year.

We were also told by industry officials that, because the majority of the large Bristol Bay harvest is caught within 10 days of the 6-week season, many fish are not well handled. For example, bruising and marking of fish, sometimes caused by gillnets, can be exacerbated by the sheer numbers of salmon that must be netted, placed on board ship or in trucks on shore, and transported to the processors. Processors can also be overloaded during this intense period, adding to handling problems. In addition, few of the Bristol Bay fishing boats have adequate refrigeration systems to preserve the freshness of the salmon.

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## Scope and Methodology

To obtain information for this report, we performed our work in Tokyo and Sapporo, Japan; in the states of Alaska and Washington; and in Washington, D.C. We interviewed members of the salmon fishing, processing, wholesaling, and retailing industries, both in the United States and Japan. We also consulted with state of Alaska and U.S. government officials in both countries and reviewed reports and statistical documents about the salmon industry and its international trade. We did not verify the data we gathered, nor did we examine allegations that price-fixing might have been responsible for the lower prices paid this year to the sockeye salmon fishermen in Bristol Bay.

We conducted our work in July and August 1991 in accordance with generally accepted government auditing standards.

As agreed with your offices, we did not obtain formal comments on this report. We did, however, receive comments from program officials of the U.S. Departments of State and Commerce and from an industry expert.

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<sup>5</sup>These nets encircle the salmon, which are then lifted aboard a fishing vessel. Seining reduces net marks, commonly associated with gillnetting.

<sup>6</sup>Salting salmon is a traditional way to preserve salmon in Japan.

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We included their comments when appropriate. We plan no further distribution of this report until 15 days after its issue date unless you notify us otherwise.

Please contact me on (202) 275-4812 if you or your staff have any questions. The major contributors to this report are listed in appendix I.

*Allan I. Mendelowitz*

Allan I. Mendelowitz, Director  
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